Massachusetts Electric
A National Grid Company

Alexandra E. Singleton
Senior Attorney

May 3, 2005

Mary L. Cottrell, Secretary
Department of Telecommunications and Energy
One South Station, 2nd Floor
Boston, MA 02110

Re: D.T.E. 04-116

Dear Secretary Cottrell:

On behalf of Massachusetts Electric Company and Nantucket Electric Company (collectively "Company"), I am enclosing responses to the information requests LDC 1-1, LDC 1-2, A 1-1, A 1-2, A 1-3, and A 1-4 of the Department's First Set of Information Requests. Please add my name and contact information to the service list for this docket.

Thank you very much for your time and attention to this matter.

Very truly yours,

Alexandra E. Singleton

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cc: Jody M. Stiefel, Hearing Officer
Joseph W. Rogers, Office of the Attorney General

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DTE-A 1-1

Request:

Regarding customer notice and customer service guarantees, please describe the following:

a) the process that would be required
(1) to ensure accurate notification of planned interruptions to customers on the affected circuit, and
(2) to accurately track and provide a customer credit to all affected customers of record; and
b) any proposed new process to ensure accurate appointment notification, rescheduling appointment, and credit for service appointment service guarantee.

Response:

a) The Company uses the following process to ensure accurate notification of planned interruptions to customers on a specific circuit:

For planned, non-emergency, outages, Mass. Electric puts forth significant effort to inform its customers of such outages in advance. The Company utilizes its Outage Management System, cross referenced with its Customer Information System, to determine which customers will be affected by a planned outage. These systems integrate to assign each customer to a particular "feeder" and "branch". For outages of more than a single transformer, the Company queries the database to determine affected customers and mails an outage notification to each customer describing the outage date, as well as an alternate date in case of inclement weather. These notifications are mailed to customers so as to provide them with at least seven days advance notification. To the extent an outage is necessary for a single transformer, existing systems are unable to support this same notification process. Instead, the Company's field workers make every effort to identify those customers served by the transformer and to then notify the customers of the outage by going door to door just prior to de-energizing the transformer.

Since the Company is using its most up-to-date records to notify customers of pending outages, the Company expects that all customers are being notified. Should a customer notification be missed due to a potential error in Company records, the Company will only be made aware if a customer calls to notify the Company of a missed notification. Upon receipt of such a call, the Company will process a $25 customer credit.

DTE-A 1-1 (continued)

b) The Company uses the following process to ensure accurate appointment notification, rescheduling appointment, and credit for service appointment service guarantee:

When the Company schedules a service appointment with a customer that requires the customer's presence at the time of service, the appointment date, time (i.e., morning (8:00 a.m. to noon) or afternoon (noon to 3:00 p.m.)), and location are recorded in the Company's Customer Information System ("CIS"). Rescheduled appointments are also recorded in CIS. If the appointment is not rescheduled and is missed, a $25 credit is applied to the customer's account whether or not the customer requests the credit.

Prepared by or under the supervision of: Robert H. McLaren

DTE-A 1-2

Request:

Regarding standardization of service quality benchmarks, please identify those service quality measures that could be standardized on a state-wide basis. Explain.

Response:

As stated in the Company's initial comments in this docket, the Company continues to believe that broadening the development of service quality performance benchmarks from an individual utility basis to a state-wide basis is problematic for a number of reasons. First and foremost, a utility's cost of service and, thus, its rates are generally premised on historical costs and performance; i.e., providing service the same way it historically has. If there are increased (or decreased) performance expectations, then often there are also increased (or decreased) costs of providing that service. Furthermore, even for those performance measures that seem to have little or no company-specific design or geographic factors, such as lost time accident rate, customer complaints, billing adjustments, and calls answered promptly, there still may be certain factors (e.g., demographic) that drive an individual utility's performance to be better or worse than another's.

Prepared by or under the supervision of: Robert H. McLaren

DTE-A 1-3

Request:

Please refer to the existing Service Quality Guidelines, Attachment 1, at 15-16, where the electric distribution companies are required to report outage information.

a) Comment on whether the required outage information in the Service Quality Guidelines is adequate and correlates to the outage information that local electric distribution companies maintain and use for calculating service quality calculation, including system average interruption duration index ("SAIDI"), system average interruption frequency index ("SAIFI"), customer average interruption frequency index, and momentary average interruption frequency;

b) If the required outage information is not considered adequate, please provide a list of additional outage information that would be necessary to correlate to the outage information used in the service quality calculation.

Response:

a) The Company believes that the required outage information in the Service Quality Guidelines is adequate and correlates to the outage information that local electric distribution companies maintain and use for calculating service quality performance. The Company specifically maintains and utilizes SAIDI and SAIFI information to determine the reliability performance of its system. The customer average interruption duration index ("CAIDI") can be derived from the previous two mentioned indices by dividing SAIDI by SAIFI. The Company does not believe that CAIDI is an appropriate metric to use, since it is subject to manipulation to depict trends that are not indicative of actual performance. The Company also believes that the momentary average interruption frequency index, which is applied to the system as a whole, has little benefit to customers, including large commercial and industrial customers who are most interested in this performance information. These customers are most interested in site-specific performance, and the Company believes that it is most efficient and effective for all customers to address such site-specific concerns on an individual basis.

b) Not applicable.

Prepared by or under the supervision of: Cheryl A. Warren

DTE-A 1-4

Request:

Regarding the proposed IEEE Standard 1366-2003, please explain:

a) its level of conformance to the level of minimum performance required under the existing Service Quality Guidelines, i.e., performance level should not be below those levels that existed in 1997 or the existing SAIDI and SAIFI benchmarks;

b) whether this proposed IEEE standard meets the statutory requirement of minimum performance measurements; and

c) whether this standard provides an incentive for local electric distribution companies to avoid minimizing interruption durations once the threshold hits a low point and window for the excludable events increase.

Response:

a) IEEE Standard 1366-2003 allows the presentation of a company's reliability results in a manner that removes the distortions caused by events that exceed that company's operational ability to respond to such events. It does not change the reliability performance of the system, but does make it easier to distinguish whether a company's performance is truly improving or deteriorating. The system performance on a mere handful of days each year can so distort the reliability indices so that the real trend of performance can not be distinguished. IEEE Standard 1366-2003 segments the reliability data; it does not exclude any data, such that regulators, company management, and customers can observe the real trend, review the performance of the company under crisis and non-crisis operational conditions, and can determine if the appropriate level of operational ability is present for crisis conditions.

Since the reliability metric results from the utilization of IEEE Standard 1366-2003 will most likely be at a different level than those calculated under previous methods of excluding data from regulatory review, new benchmarks would have to be set. These benchmarks would not only be lower than before, the value of the standard deviation would also be much less. While, from a strict mathematical position, the probability of a company being within one or more standard deviations from the mean is no different when utilizing IEEE Standard 1366-2003, any real change in the reliability results will more quickly fall outside the previous acceptable range. This is due to the fact that the benchmarks, i.e. the standard deviation values, are not artificially increased by the inclusion of large, crisis-mode events as in the current method.

The result is that the use of IEEE Standard 1366-2003 will identify the actual performance of the system that existed in 1997, if adequate data exists to perform the calculation, but the existing benchmarks would have to be adjusted to fit the new methodology. In addition, the IEEE Standard 1366-2003 creates a self-correcting system where deterioration of system

DTE-A 1-4 (continued)

reliability will be punished by increasing the threshold values for large events that might otherwise be segmented out of the metric calculation, and where improvement of the system's reliability is rewarded by just the opposite effect on the threshold value.

b) The Company believes that the proposed IEEE standard meets the statutory requirement of minimum performance measurements.

c) It is assumed that the question refers to the threshold for determining the daily level of SAIDI that must be exceed for that day to be identified as a Major Event Day. For the threshold to reach a very low value, the five year average daily SAIDI would have to be very low, and there would have to be very little variation in that daily SAIDI value (the standard deviation of the five years of daily SAIDI data values would have to be very small). These characteristics would indicate that a particular company was not only providing its customers with very exceptional reliability, but, would have found a way to minimize the effects of any storm or other exogenous event on the performance of its system. It is correct that under these conditions the threshold, identified as T_{med} in the Standard, would be lower, thereby allowing a lesser event to qualify. But what must be understood is that the company would have had to perform at this level for at least five consecutive years, thereby establishing new performance criteria for its system performance. Also, events that would then qualify as major events under this threshold would cause the standard deviation of the data set to increase, requiring improvement by the company to maintain its performance record. This again points out the self-correcting effect of the Standard, as presented in the answer to DTE-A 1-4 a).

Attached to this response is a response to comments raised by a regulator from Illinois, along with the original comments, from a presentation to the National Association of Regulatory Utility Commissioners ("NARUC"), which address additional issues relating to the application of IEEE Standard 1366-2003.

Prepared by or under the supervision of: Cheryl A. Warren

Attachment to DTE-A 1-4

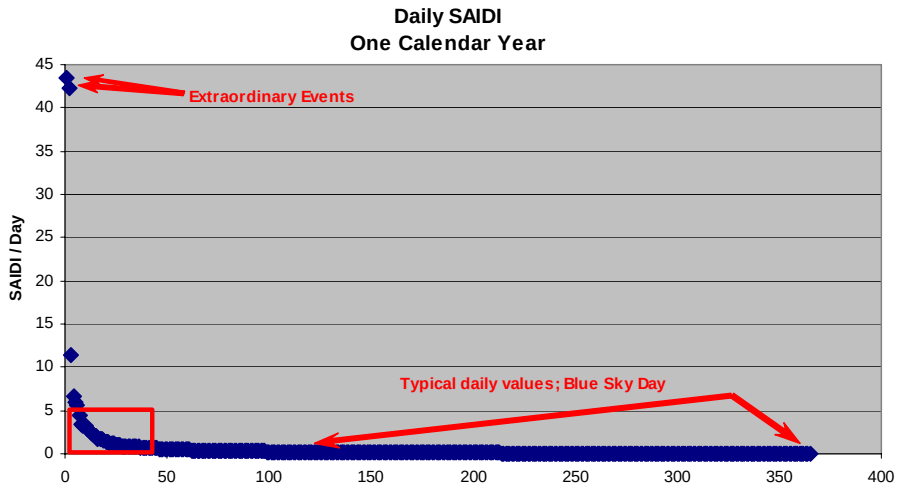
It appears that common misperceptions of the IEEE 1366-2003 method have affected the opinion of Director Stoller, and his Chief Engineer, towards this way of presenting the reliability results of a utility. The Working Group that developed this method fully agrees with Director Stoller's statements in his last paragraph: "I believe there is simply no way a purely statistical method can be developed that will take the place of constant human analysis to monitor system material condition (to determine whether a system has been maintained at operational and/or design standards) and human analysis of outages to determine causation. I believe any time a utility wants to have its worst outage events excluded from analysis, and we accede to that desire, we have lost the ability to assure reliable service." What we need to convey is that; 1) the method is not a purely statistical method, and, 2) no customer interruptions are being excluded from analysis. The Working Group believes that utilizing the IEEE 1366-2003 Standard will provide better, clearer, and more useful information about all interruptions to regulators, the public, and the management of the utilities, to allow the ability to assure reliable service. The issues Director Stoller presented are addressed below.

Statistical Method:

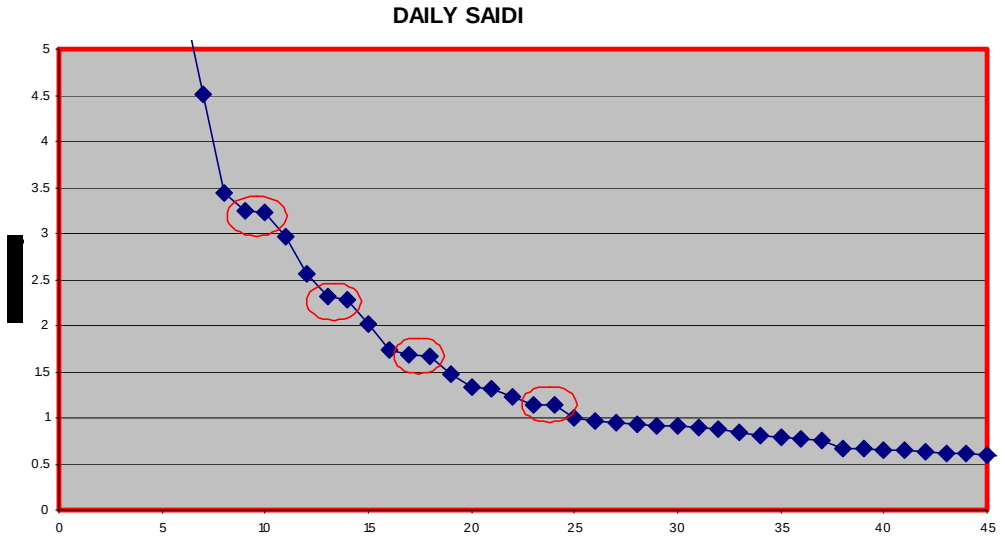
The Working Group reviewed multiple years' of reliability data for over 30 utilities and concluded that certain, previously unseen characteristics were common to each and every one of the data sets. One of the first characteristics noted was that the daily SAIDI values, while random in occurrence, did not fall into a Normal, or Gaussian, distribution. While no precise distribution could be found to fit the daily SAIDI data, it was determined that it most closely resembled a Log-normal distribution for each and every utility. The key point here is that the process did not start with a theoretical determination of a statistical process that needed to be fitted to the actual data, but, an empirical analysis of the data led to a possible statistical method to use.

Major Event Days are Due to Operational Capabilities being Exceeded:

The review of the data also led to conclusion that Major Event Days were occurring due to operational capabilities being exceeded. The following graph presents the daily SAIDI values for one calendar year for one utility, sorted from the highest to the lowest value. This data is representative of every utility reviewed.



While the low daily values of SAIDI, that occur most days of the year, are obvious along the horizontal axis, and, the very high daily SAIDI values that occur just a few times a year during extraordinary events are noted along the vertical axis, the characteristic, important to the present discussion, is hidden within the boxed-in area at the lower left of the graph. When the scale in this area is changed, the following graph results.



The red ovals identify discontinuities in the daily SAIDI values. These appear in the data for every utility that has been reviewed. The proposed explanation for these has been that; as a regional operating area within a utility becomes overwhelmed with numerous interruptions, the assigned personnel in those areas cannot respond to every one of them as fast as when only a few interruptions occur at any one time. At these times, the length of the average interruption is increased above the norm. Additional resources may be

requested from adjacent operating areas that are not experiencing the same problems. A simple example can provide further explanation: Assume an operating area with five line crews available. If no more than five interruptions occur at any one time, these crews can respond to them in the average time, repair them and move on to other work. If, however, ten interruptions occur at once, these five crews will respond to five of them while the other five interruptions must wait the average time of restoration before any crew can address their problems. The time to restore the last five will, on average, be twice as long as the first five, due to the operational capabilities that exist. Now, this in no way assumes that the operational capabilities are adequate. That must be left to the judgment of the humans assigned to evaluate such matters. It does identify that the resultant reliability metrics are affected by events exceeding the current operational capability of the utility, since the example can be expanded to any size operating region. The use of mutual aid during extreme events supports this argument.

Exclusion of Data:

The IEEE 1366-2003 Standard, unlike most reliability reporting requirements of the various States, does not exclude any events from review. The Standard recognizes that utilities address reliability problems in two distinct manners: 1) the day-to-day type of operation where line crews respond to interruptions as part of the normal everyday workload, which includes shifting efforts to neighboring areas to provide temporary support, and, 2) emergency operations where crews from other utilities and contractors are utilized, unique equipment and material supply lines are initiated, and extraordinary hours are worked by all. The Working Group believes that the reliability results of these two very different types of operations need to be reviewed separately. Segmenting the Major Event Days from the typical Day-to-Day reliability results allows the reviewers to identify any trends that exist, without the overpowering effects of those few extraordinary events. The benefits of additional expenditures for reliability improvement can easily be lost in the reliability results when all events are aggregated.

The Standard states that those days determined to be Major Event Days must be reviewed separately to ensure that the operational capabilities of the utility are prepared for such events; that plans to move crews and request additional outside assistance exist and were implemented adequately, that sufficient spare material was available, that the response to interruptions was appropriately prioritized.

Regulators and utility management will be presented with reliability data that allows them to identify benefits of and problems in program implementation, real trends in the system reliability, and the response to the extraordinary events that occur.

Bad Performance Encourages Future Bad Performance:

This is not correct. The IEEE 1366-2003 Standard utilizes past years' daily SAIDI data to establish a Major Event Day threshold for the present year. If a particular utility were to allow the system to degrade, not only would a greater number of Major Event Days occur, but, the typical day-to-day values, seen in the lower right of the first graph presented, will also increase. Segmenting the data will require the utility to explain: 1) a greater number of Major Event Days, and the emergency operational capabilities that should appear to be deteriorating, and, 2) a higher value of annual SAIDI, along with an increasing trend. Furthermore, as the bad performance endures, the threshold for identifying Major Event Days increases, making it more difficult to segment days as such, which will cause an increased number of higher valued days to be included in the typical day-to-day reliability numbers, thereby increasing the reliability metric even more.

So, contrary to the assumption presented by Director Stoller, the exact opposite would occur. The utility's reliability metric would increase, instigating greater review of the operational capabilities of the utility to respond to reliability issues.

Statistically, two to three days a year would normally be identified as Major Event Days for any one utility. Since the statistical methodology is only a tool, chosen because it best replicates the results obtained empirically from the data, anywhere from zero to twelve Major Event Days per year have been observed. Again, the Standard does not assume that this number of events is proper. Only those appointed to review a company’s operations can make that determination.

Constant Human Analysis Required:

The Working Group agrees. What the IEEE 1366-2003 Standard does is present the reliability results for a utility in a manner that allows better scrutiny of the factors that affect those very results. It removes the subjective aspects of what interruptions should or should not be included for the review. It requires all events to be presented to those that are delegated to perform the analysis. It presents the data in a manner that removes the masking effects of a few large events on the typical operations, and the average of many small events on the results of the Major Event Days.

Conclusion:

The Working Group believes that IEEE 1366-2003 is not only an acceptable method to present the reliability results of a utility, is the only method to remove all subjective suppositions of what constitutes an extraordinary event, allows a more comprehensive evaluation of a utility's reliability efforts, but also creates a uniform data presentation that can be used to initiate benchmarking of results. It is recommended that all utilities be required to report reliability results in accordance with this Standard. The Working Group believes that regulators, the public and management of the utilities will benefit from the more appropriate presentation of the reliability performance.

The preceding attachment was in response to the following comments raised by Director Stoller from Illinois.

02/23/2005 02:39 PM

To: <diane_barney@dps.state.ny.us>
cc:
Subject: NARUC Electric Reliability Staff Subcommittee Meeting

I had my chief engineer take a look at the Warren presentation of the IEEE methodology.

His opinion and mine, after he explained the method proposed in the Warren handout, is that the method is entirely unacceptable. The handout avers on page 11 that a major event day is one where the system/s operational and/or design limits are exceeded. In fact, the method to exclude "bad" days from the analysis is entirely statistical in operation: it pays no heed to operational and/or design limits. What happens with this methodology is that, regardless of the operational and/or design limits of a system, the analytical method would encourage, or at least provide minimal incentives to avoid, permitting system material condition deterioration. The worse the condition of the system, and the more often the system outage numbers exceed the threshold value for exclusion, the more bad-performance days can be excluded.

I believe there is simply no way a purely statistical method can be developed that will take the place of constant human analysis to monitor system material condition (to determine whether a system has been maintained at operational and/or design standards) and human analysis of outages to determine causation. I believe any time a utility wants to have its worst outage events excluded from analysis, and we accede to that desire, we have lost the ability to assure reliable service.

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